

A FOSSIL FLOWER FROM THE EOCENE.

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Flowers are by no means so common in the fossil state that new occurrences are without exceptional interest. If the flowers preserved in the Baltic and other amber deposits are omitted from the enumeration of this class of remains their number is very limited and their preservation is often not all that could be desired. For these reasons I am prompted to publish a preliminary description of a well-preserved flower from the Eocene of southern Tennessee collected some years ago by Prof. L. C. Glenn, of Vanderbilt University, and preserved in the collections of the United States National Museum.

I have been engaged for some years past under the auspices of the United States Geological Survey in a study of the wonderfully rich fossil floras of the Southern States, particularly that of the Lower Eocene, or Wilcox group of formations. The latter flora as known at the present time includes upwards of 250 species of subtropical, largely strand, types. Most of the species are new and the flora as a whole is unlike described American Eocene floras which come largely from the Rocky Mountain province. It is comparable with those of the European Eocene and with the existing flora of the West Indies, Central and northern South America. The specimen described in the following note is made the type of a new genus, since it is not referable with certainty to any of the existing genera of the family with which it shows the most affinity.

COMBRETANTHITES, new genus.

This genus is proposed for the following species which is based on a fossil flower referable to the Combretaceæ and very similar to the flowers of some of the species of the genus *Combretum*. To avoid any seeming inaccuracies the species is described in detail from the specimen even though this repeats some of the floral characters that run through the family.

COMBRETANTHITES EOCENICA, new species.

Peduncle stout, curved, about 4 mm. long. Calyx rather deeply 4 or 5 lobed, the lobes ovate in outline and with bluntly pointed tips. Corolla polypetalous of 4 or 5 petals alternating with the calyx lobes, long and narrow, seemingly pointed, about twice the length of the calyx lobes. Ovary inferior, style long and slender, probably with a single terminal stigma. Stamens 12 in number with long slender filaments, exserted. Anthers elongate elliptical, two-celled, dehiscing by longitudinal slits. The stamens may vary in length or their apparent variation may be simply a feature of preservation.

The present species is based on the exceptionally preserved flower shown natural size in figure 1 of the plate, lying across a leaf of *Cassia emarginata* Berry, the other markings on the leaf being those of a well-marked leaf-spot fungus. It is also to be pointed out that figures 1-3 are from photographs that have not been retouched in any particular.

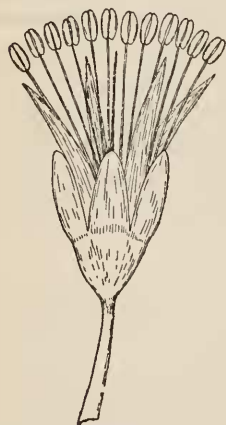


FIG. 1.—RESTORATION OF COMBRETANTHITES EOCENICA. ENLARGED FOUR TIMES.

I am not sure that appearances that I have interpreted as petals are correctly identified, but it is hard to imagine what else they can possibly represent. The single slender style is also a feature that may be simulated by a filament. As shown in the accompanying restoration the flower is polypetalous regular and perfect. It is represented as having a four-lobed calyx and four petals, although only three calyx lobes and two petals are distinctly seen in the specimen. If four is the correct number, then the stamens are three times

as numerous as the petals. The reason for considering that these flowers were capitate or in crowded spikes is their small size, narrow petals, and exserted style and stamens—all characters shared by the flowers of the Mimosaceæ and Combretaceæ, the two families whose flowers are most like the fossil. In the Mimosaceæ the filaments are usually more slender and more elongated as well as more or less united, while they are free in the fossil. The anthers are also much smaller and less elongated in the Mimosaceæ. Most of the Combretaceæ have flowers very similar to the fossil although the stamens are usually reduced in number to twice the number of the petals or of the calyx lobes in the apetalous forms. However, some of the modern forms have thrice as many stamens as petals or calyx lobes. The most similar modern flowers in appearance that I have been able to find are those of *Combretum guanaiense* Rusby, from Bolivia, and in this the stamens are only eight in number and more exserted. I

have submitted the specimen to various botanists familiar with the flora of tropical America and compared it with a vast amount of recent material and am satisfied that it represents an Eocene member of the Combretaceæ, a family that was apparently well represented in the early Eocene, since I have described (in manuscript) from contemporaneous deposits the leaves of two species of *Combretum*, two species of *Terminalia*, one species of *Conocarpus*, and both the leaves and fruit of a species of *Laguncularia*. These all serve in a measure to substantiate one another and a certain amount of confirmatory evidence is furnished by the petrified wood described by Felix from the European Eocene as *Combretacinium*¹ and compared with the woods of modern forms of *Terminalia*, *Bucida*, etc.

Leaves of *Terminalia* and *Combretum* have also been described by various authors from the European Tertiary, tending to show the great similarity between the flora of Europe and that of southeastern North America in Eocene times and the tropical American character of European Eocene floras.

Formation and locality.—Wilcox Group of the Eocene, 1½ miles west of Grand Junction in Fayette County, Tennessee. (Collected by L. C. Glenn.)

Holotype.—Cat. No. 34445, U.S.N.M.

EXPLANATION OF PLATE 21.

Fig. 1. Impression of *Combretanthites eocenica*, new genus and species, lying across a leaf of *Cassia*, natural size.

2. Same enlarged four times.

3. Same enlarged six times.

4. Same as figure 3, photograph retouched.

Figs. 1-3 are from photographs without retouching in any particular.

¹ Felix, Zeits. deutsch. geol. Gesell., vol. 46, 1894, p. 90, pl. 10, figs. 1a-c.